

## **SPIN READOUT AND INITIALIZATION IN SEMICONDUCTOR QUANTUM DOTS**

### **ABSTRACT**

A semiconductor quantum dot device converts spin information to  
5 charge information utilizing an elongated quantum dot having an  
asymmetric confining potential along its length so that charge movement  
occurs during orbital excitation. A single electron sensitive electrometer  
is utilized to detect the charge movement. Initialization and readout can  
be carried out rapidly utilizing RF fields at appropriate frequencies.